Yee & Associates, P.C.

4100 Alpha Road
Suite 1100
Dallas, Texas 75244

Main No. (972) 385-8777
Facsimile (972) 385-7766

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To: Commissioner for Patents for **Examiner Fadey S. Jabr** **Group Art Unit 3639**	Facsimile No. **571/273-8300**
From: Candace Crawford for Lourdes Perez Legal Assistant to Peter B. Manzo	No. of Pages Including Cover Sheet: **33**

Enclosed herewith:

- Transmittal of Appeal Brief; and
- Appeal Brief.

Re: Application Serial No. **09/832,438**
Attorney Docket No. **YOR920010031US1**

Date: Friday, February 24, 2006

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: **Liu et al.**

Serial No.: **09/832,438**

Filed: **April 10, 2001**

For: **Apparatus and Methods for Maximizing Service-Level-Agreement Profits**

Group Art Unit: **3639**

Examiner: **Jabr, Fadey S.**

Attorney Docket No.: **YOR920010031US1**

35525
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By: Carrie Parker
Carrie Parker

TRANSMITTAL OF APPEAL BRIEF

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:
ENCLOSED HEREWITH:

- Appeal Brief (37 C.F.R. 41.37)

A fee of $500.00 is required for filing an Appeal Brief. Please charge this fee to IBM Corporation Deposit Account No. 50-0510. No additional fees are believed to be necessary. If, however, any additional fees are required, I authorize the Commissioner to charge these fees which may be required to IBM Corporation Deposit Account No. 50-0510. No extension of time is believed to be necessary. If, however, an extension of time is required, the extension is requested, and I authorize the Commissioner to charge any fees for this extension to IBM Corporation Deposit Account No. 50-0510.

Respectfully submitted,

Peter B. Manzo
Registration No. 54,700
Duke W. Yee
Registration No. 34,285
YEE & ASSOCIATES, P.C.
P.O. Box 802333
Dallas, Texas 75380
(972) 385-8777
ATTORNEYS FOR APPLICANTS

Docket No. YOR920010031US1 ***PATENT***

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: **Liu et al.** §
§ Group Art Unit: **3639**
Serial No. **09/832,438** §
§ Examiner: **Jabr, Fadey S.**
Filed: **April 10, 2001** §
§
For: **Apparatus and Methods for Maximizing Service-Level-Agreement Profits** §

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

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By: Carrie Parker
Carrie Parker

APPEAL BRIEF (37 C.F.R. 41.37)

This brief is in furtherance of the Notice of Appeal, filed in this case on January 4, 2006.

A fee of $500.00 is required for filing an Appeal Brief. Please charge this fee to IBM Corporation Deposit Account No. 50-0510. No additional fees are believed to be necessary. If, however, any additional fees are required, I authorize the Commissioner to charge these fees which may be required to IBM Corporation Deposit Account No. 50-0510. No extension of time is believed to be necessary. If, however, an extension of time is required, the extension is requested, and I authorize the Commissioner to charge any fees for this extension to IBM Corporation Deposit Account No. 50-0510.

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REAL PARTY IN INTEREST

The real party in interest in this appeal is the following party:

International Business Machines Corporation of Armonk, New York.

RELATED APPEALS AND INTERFERENCES

With respect to other appeals or interferences that will directly affect, or be directly affected by, or have a bearing on the Board's decision in the pending appeal, there are no such appeals or interferences.

STATUS OF CLAIMS

A. TOTAL NUMBER OF CLAIMS IN APPLICATION

Claims in the application are: 1, 3-15, 17-29, and 31-42.

B. STATUS OF ALL THE CLAIMS IN APPLICATION

1. Claims canceled: 2, 16, and 30.
2. Claims withdrawn from consideration but not canceled: none.
3. Claims pending: 1, 3-15, 17-29, and 31-42.
4. Claims allowed: none.
5. Claims rejected: 1, 3-15, 17-29, and 31-42.
6. Claims objected to: none.

C. CLAIMS ON APPEAL

The claims on appeal are: 1, 3-15, 17-29, and 31-42.

STATUS OF AMENDMENTS

An amendment after final rejection was not filed. Therefore, claims 1, 3-15, 17-29, and 31-42 on appeal herein are as amended in the Response to Office Action dated June 16, 2005.

SUMMARY OF CLAIMED SUBJECT MATTER

A. CLAIM 1 - INDEPENDENT

The subject matter of claim 1 is directed to a method in a data processing system (pages 5-9 and associated figures 1-3) of allocating resources of a computing system (page 6, lines 23-25) to hosting of a data network site (page 6, lines 5-7) to thereby maximize generated profit (page 6, lines 25-26). A total profit for processing requests received is calculated by the computing system for the data network site based on at least one service level agreement (page 6, lines 17-22). Resources of the computing system are allocated to maximize the total profit (page 6, lines 23-26), wherein calculating a total profit includes, for each request received by the computing system for the data network site, determining whether processing of the request generates a revenue or a penalty, wherein a revenue is generated when an allocation of resources is such that the request is processed in accordance with the service level agreement and a penalty is generated when the allocation of resources is such that the request is not processed in accordance with the service level agreement (page 10, lines 18-21), and wherein the total profit is obtained by subtracting the penalty from the revenue for each request (page 10, lines 23-24).

B. CLAIM 15 - INDEPENDENT

Independent method claim 1 is representative of independent apparatus claim 15. As a result, the claimed subject matter of independent claim 15 is found in the same locations as claim 1 as laid out above. In addition, the "means for" calculating a total profit for processing requests and allocating resources of the computing system may be found on pages 5-9 and associated figures 1-3.

C. CLAIM 17 – DEPENDENT

Dependent apparatus claim 17 is directed to the means for calculating a total profit includes means for using a cost model in which profit is gained for each request to the data network site that is processed in accordance with a service level agreement and a penalty is paid for each request to the data network site that is not processed in accordance with the service level agreement (page 12, line 27 – page 13, line 23). The "means for" calculating a total profit and using a cost model may be found on pages 5-9 and associated figures 1-3.

D. CLAIM 22 – DEPENDENT

Dependent apparatus claim 22 is directed to the means for determining an optimum resource allocation that includes means for modeling the resource allocation as a queuing network, means for decomposing the queuing network into separate queuing systems, and means for summing cost calculations for each of the separate queuing systems, wherein means for summing cost calculations includes means for summing profits and penalties of each of the separate queuing systems (page 13, line 25 – page 22, line 2). The "means for" determining an optimum resource allocation, modeling the resource allocation as a queuing network, decomposing the queuing network into separate queuing systems, summing cost calculations for each of the separate queuing systems, and summing profits and penalties of each of the separate queuing systems may be found on pages 5-9 and associated figures 1-3.

E. CLAIM 29 - INDEPENDENT

Independent method claim 1 is representative of independent computer program product claim 29. As a result, the claimed subject matter of independent claim 29 is found in the same locations as claim 1 as laid out above. In addition, the computer program product may be found on page 29, line 22 – page 30, line 2.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. GROUND OF REJECTION 1 (Claims 1, 3-15, 17-29, and 31-42)

Claims 1, 3-15, 17-29, and 31-42 stand rejected under 35 U.S.C. § 101 as being directed towards non-statutory subject matter.

B. GROUND OF REJECTION 2 (Claims 1, 3-15, 17-29, and 31-42)

Claims 1, 3-15, 17-29, and 31-42 stand rejected under 35 U.S.C. § 103 as being unpatentable over Smith, U.S. Patent Publication No. 2002/0091854A1 in view of Denise Pappalardo, *ISPs continue to improve Internet access SLAs*, 18 Network World 25, 25-27 (Feb. 19, 2001).

ARGUMENT

A. GROUND OF REJECTION 1 (Claims 1, 3-15, 17-29, and 31-42)

The Examiner has rejected claims 1, 3-15, 17-29, and 31-42 under 35 U.S.C. § 101 as being directed towards non-statutory subject matter. This rejection is respectfully traversed.

The fact that a claim is drawn towards a subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula, computer program, or digital computer. *Diamond v. Diehr*, 450 U.S. 175, 209 U.S.P.Q. 1 (1981). The claim must be considered as a whole when making an analysis regarding statutory subject matter. *Parker v. Flook*, 437 U.S. 584, ___, 198 U.S.P.Q. 193, ___ (1978); *Diamond v. Diehr*, 450 U.S. 175, ___, 209 U.S.P.Q. 1, ___ (1981). In this case, claims 1, 3-15, 17-29, and 31-42 are directed to statutory subject matter when considered as a whole.

With regard to the claims, the Examiner states:

> As per **Claims 1, 3-15, 17-29, 31-42**, these claims recite a series of steps and are considered for the purpose of analysis un 35 U.S.C. 101 as reciting a series of steps. The claims do not recite an pre- or post-computer activity but merely perform a series of steps of selecting, storing, generating and transmitting data such as source code numbers, randomly generated numbers and very long decoded numbers, and is directed to non-statutory subject matter. A process is statutory if it requires physical acts to be performed outside of the computer independent of and following the steps performed by a programmed computer, where those acts involve the manipulation of tangible physical objects and result in the object having a different physical attribute or structure *(Diamond v. Diehr,* 450 U.S. at 187, 209 USPQ at 8). Further, the **claims merely manipulate an abstract idea (selecting, storing, generating and transmitting data) or perform a purely mathematical algorithm without limitation to any practical application**. A process which merely manipulates an abstract idea or performs a purely mathematical algorithm is non-statutory despite the fact that it might have some inherent usefuleness *(Sakar,* 558 F.2d at 1335,200 USPQ at 139).
>
> Furthermore, in determining whether the claimed subject matter is statutory under *35* U.S.C. 101, a practical application test should be conducted to determine whether a "useful, concrete and tangible result" is accomplished, See *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352, 1359-60, 50 USPQ2d 1447, 1452-53 (Fed. Cir. 1999); *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368, 1373, 47 USPQ2d *1596,* 1600 (Fed. Cir. 1998).
>
> An invention, which is eligible or patenting under 35 U.S.C. 101, is in the "useful arts" when it is a machine, manufacture, process or composition of matter,

which produces a concrete, tangible, and useful result. The fundamental test for patent eligibility is thus to determine whether the claimed invention produces a "use, concrete and tangible result". The test for practical application as applied by the examiner involves the determination of the following factors"

(a) "Useful" — The Supreme Court in *Diamond v. Diehr* requires that the examiner look at the claimed invention as a whole and compare any asserted utility with the claimed invention to determine whether the asserted utility is accomplished. Applying utility case law the examiner will note that:

i. the utility need not be expressly recited in the claims, rather it may be inferred.

ii. if the utility is not asserted in the written description, then it must be well established.

(b) "Tangible" — Applying *In re Warmerdam*, 33 F.3d 1354, 31 USPQ2d 1754 (Fed. Cir. 1994), the examiner will determine whether there is simply a mathematical construct claimed, such as a disembodied data structure and method of making it. If so, the claim involves no more than a manipulation of an abstract idea and therefore, is nonstatutory under 35 U.S.C. 101. In *Warmerdam* the abstract idea of a data structure became capable of producing a useful result when it was fixed in a tangible medium, which enabled its functionality to be realized.

(c) "Concrete" — Another consideration is whether the invention produces a "concrete" result. Usually, this question arises when a result cannot be assured. An appropriate rejection under 35 U.S.C. 101 should be accompanied by a lack of enablement rejection, because the invention cannot operate as intended without undue experimentation.

The claims, as currently recited, appear to be directed to nothing more than a series of steps including calculating and subtracting data which nothing more than manipulating numbers without any useful, concrete and tangible result and are therefore deemed to be non-statutory. **While these numbers may be concrete and/or tangible, there does not appear to be any useful result.**

Furthermore, it is noted that there is no interrelationship between the independent claim preamble and the body of the claim. For instance, claim 1 preamble recites: "A method in a data processing system of allocating resources of a computing system to hosting of a data network site to thereby maximize generated profit:; but the claim steps of calculating and subtracting data fail to accomplish the result/application of actually maximizing profit. [Emphasis added].

Final Office Action dated October 27, 2005, pages 3-5.

The Examiner alleges that "[w]hile these numbers may be concrete and/or tangible, there does not appear to be any useful result." Final Office Action, pages 5. Appellants agree with the Examiner that calculating a total profit for processing requests as recited in independent claims 1,

15, and 29 of the present invention is "concrete and/or tangible." However, Appellants respectfully disagree that the present invention does not recite "any useful result." "In determining whether the claim is for a 'practical application,' the focus is not on whether the steps taken to achieve a particular result are useful, tangible and concrete, but rather that the final result achieved by the claimed invention is "useful, tangible and concrete." *Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility*, page 20.

Independent claim 1 of the present invention, which is representative of independent claims 15 and 29, recites a useful result in a data processing system for allocating resources of a computing system to hosting of a data network to thereby maximize generated profit by calculating a total profit for processing requests received by the computing system for the data network site based on at least one service level agreement and allocating resources of the computing system to maximize the total profit, wherein calculating a total profit includes, for each request received by the computing system for the data network site, determining whether processing of the request generates a revenue or a penalty, wherein a revenue is generated when an allocation of resources is such that the request is processed in accordance with the service level agreement and a penalty is generated when the allocation of resources is such that the request is not processed in accordance with the service level agreement, and wherein the total profit is obtained by subtracting the penalty from the revenue for each request. In other words, the data processing system allocates resources of the computing system for each request received by determining whether a profit or penalty is generated for each request according to the service level agreement as recited in claim 1. As a result, independent claims 1, 15, and 29 have practical application by allocating computing system resources based upon whether a revenue or penalty is generated by each processing request and do not "merely manipulate an abstract idea" as the Examiner alleges.

Therefore, claims 1, 15, and 29 recite statutory subject matter. Claims 3-14, 17-28, and 31-42 are dependent claims depending on independent claims 1, 15, and 29, respectively. Consequently, claims 3-14, 17-28, and 31-42 also recite statutory subject matter. Accordingly, the rejection of claims 1, 3-15, 17-29, and 31-42 under 35 U.S.C. § 101 has been overcome.

Further, the Examiner alleges that "there is no interrelationship between the independent claims preamble and the body of the claim. For instance, claim 1 preamble recites: 'A method in a data processing system of allocating resources of a computing system to hosting of a data

network site to thereby maximize generated profit:; but the claim steps of calculating and subtracting data fail to accomplish the result/application of actually maximizing profit." Final Office Action, page 5. Appellants respectfully disagree with the Examiner's assessment of the interconnection between the preamble and the body of the claim. Claim 1 recites that a data processing system allocates computing system resources in order to maximize generated profit by the method steps of calculating a total profit and allocating computing system resources based on calculating the total profit. In addition, claim 1 also recites that computing system resources are allocated to maximize the total profit by determining whether processing each request generates a revenue or penalty in accordance with a service level agreement. In other words, the data processing system allocates the computing system resources in such a way as to provide the most economically desirable or cost efficient route using specific resources of the computing system after determining cost in accordance with the service level agreement. Consequently, the generated profit is maximized by allocating computing system resources according to the method steps recited in claim 1. Accordingly, claim 1 of the present invention recites an interrelationship between the preamble and the body of the claim.

B. GROUND OF REJECTION 2 (Claims 1, 3-15, 17-29, and 31-42)

The Examiner has rejected claims 1, 3-15, 17-29, and 31-42 under 35 U.S.C. § 103 as being unpatentable over Smith, U.S. Patent Publication No. 2002/0091854A1 ("Smith") in view of Denise Pappalardo, *ISPs continue to improve Internet access SLAs*, 18 Network World 25, 25-27 (Feb. 19, 2001) ("Pappalardo"). This rejection is respectfully traversed.

The Examiner bears the burden of establishing a *prima facie* case of obviousness based on the prior art when rejecting claims under 35 U.S.C. § 103. *In re Fritch*, 972 F.2d 1260, 23 U.S.P.Q.2d 1780 (Fed. Cir. 1992). For an invention to be *prima facie* obvious, the prior art must teach or suggest all claim limitations. *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974). In this case, the Examiner has not met this burden because all of the features of these claims are not found in the cited references as believed by the Examiner. Therefore, the combination of Smith and Pappalardo would not reach the presently claimed invention recited in these claims.

Independent claim 1 of the present invention, which is representative of independent claims 15 and 29, reads as follows:

> 1. A method in a data processing system of allocating resources of a computing system to hosting of a data network site to thereby maximize generated profit, comprising:
>
> calculating a total profit for processing requests received by the computing system for the data network site based on at least one service level agreement; and
>
> allocating resources of the computing system to maximize the total profit, wherein calculating a total profit includes, for each request received by the computing system for the data network site, determining whether processing of the request generates a revenue or a penalty, wherein a revenue is generated when an allocation of resources is such that the request is processed in accordance with the service level agreement and a penalty is generated when the allocation of resources is such that the request is not processed in accordance with the service level agreement, and wherein the total profit is obtained by subtracting the penalty from the revenue for each request.

With regard to claim 1, the Examiner states:

> As per Claims 1, 3, 15, 17, 29 and 31, Smith discloses method of allocating resources of a computing system to hosting of a data network site to thereby maximize generated profit, comprising:
>
> - calculating a total profit for processing requests received by the computing system for the data network site based on at least one service level agreement (Pars. 13-16); and
>
> - allocating resources of the computing system to maximize the total profit. Nonetheless, Smith fails to disclose a method wherein calculating a total profit includes, for each request received by the computing system for the data network site, determining whether processing of the request generates a revenue or a penalty, wherein a revenue is generated when an allocation of resources is such that the request is processed in accordance with the service level agreement and a penalty is generated when the allocation of resources is such that the request is not processed in accordance with the service level agreement, and wherein the total profit is obtained by subtracting the penalty from the revenue for each request.
>
> However, Pappalardo teaches generating revenue by charging the customer a fee for processing the request according to the service level agreement and generating a penalty when the request is not processed according to the service level agreement (Lines 28-32). Therefore, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify the method of Smith and include generating revenue by determining if the processing of the request generates a profit or a penalty based on the service level agreement as taught by Pappalardo because penalizing the service provider when the request is

not processed according to the SLA will greatly improve the service provider's ability to supply enhanced performance therefore generating greater profits.

Final Office Action dated October 27, 2005, pages 6-7.

Smith teaches a method for "operating a commissioned e-commerce service provider that provides services to businesses on a computerized network such as the Internet in exchange for a small commission on the commercial transactions generated using those services. Instead of paying a monthly fee for the Internet required to host a Web site or operate an e-commerce site, the business contracts with the commissioned e-commerce service provider to provide these services based on receiving a percentage commission of the commercial transactions generated using these services. Preferably, the commission percentage is tiered in accordance with the amount of traffic at the site to provide a nominal level of service at a lower commission rate, yet allow for an exceptional volume of traffic to be accommodated by the site at a higher commission rate without having the site fail or the service become overwhelmed. The commissioned e-commerce service provider **allocates servers and resources on an as-needed basis** to the Web sites and applications of the business in response to the immediate demand for internet access to those Web sites and applications." [Emphasis added]. Smith, paragraph 0013. In other words, Smith teaches that the service provider receives a tiered percentage commission of the commercial transaction based upon the amount of network traffic and that resources are allocated on an as-needed basis in response to the immediate demand for Internet access. Consequently, Smith teaches that the service provider receives a commission or revenue regardless of whether a profit or penalty is generated for services and that system resources are allocated based on system performance.

In contrast, claim 1 recites calculating a total profit for processing requests received by the computing system for the data network site based on at least one service level agreement and allocating resources of the computing system to maximize the total profit, wherein calculating a total profit includes, for each request received by the computing system for the data network site, determining whether processing of the request generates a revenue or a penalty, wherein a revenue is generated when an allocation of resources is such that the request is processed in accordance with the service level agreement and a penalty is generated when the allocation of resources is such that the request is not processed in accordance with the service level agreement,

and wherein the total profit is obtained by subtracting the penalty from the revenue for each request. In other words, computing system resources are allocated for each request received by determining whether a revenue or penalty is generated for each request according to the service level agreement as recited in claim 1. Thus, claim 1 recites that system resource allocation is based upon economic factors for each request received.

Smith teaches that the service provider receives a commission regardless of whether a profit or penalty is generated for services, whereas claim 1 recites computing system resources are allocated for each request received by determining whether a profit or penalty is generated for each request according to the service level agreement. In addition, Smith teaches system resources are allocated based on performance factors, whereas claim 1 recites that system resource are allocated based upon economic factors. Hence, Smith does not teach or suggest the features recited in claim 1 above.

However, the Examiner alleges that Smith teaches calculating a total profit for processing requests received by the computing system for the data network site based on at least one service level agreement in paragraphs 13-16. Final Office Action, page 6. Smith teaches generating a 3-tier commission percentage for service providers to provide network services. "[T]he base tier of the commission percentage is established in relation to the anticipated or actual average usage of services as measured against the volume of commercial transactions during this average usage. A second tier of the commission percentage is defined at a predetermined increase above the base tier in the event that immediate usage exceeds a first predefined level above the average usage. A third tier of the commission percentage is defined at a predetermined increase above the second tier in the event that immediate usage exceeds a second predefined level above the average usage." Smith, paragraph 0014.

In other words, Smith teaches that the commission percentage is tiered by determining how far the immediate usage of services exceeds the average usage of services. The commission percentage, as taught by Smith, is not tiered by determining whether processing of service requests generates a profit or penalty for each service request as recited in claim 1. Smith only teaches that the commission percentage is tiered in accordance with the amount of traffic at the site or average usage to provide a nominal service level at a lower commission rate or to provide an exceptional service level at a higher commission rate. Smith, paragraph 0013.

Even though Smith teaches that the 3 tiers of the commission percentage may be represented by three different service level agreement arrangements for a given customer account (Smith, paragraph 0066), Smith does not teach or suggest that allocation of computing system resources are based on whether each request received by the computing system generates a revenue or penalty in accordance with the service level agreement as recited in claim 1. In paragraph 0066, Smith teaches that the 3 tiers of the commission percentage provided by the three service level agreement arrangements are only based upon system load performance. Smith makes no reference to computing system resource allocation based upon system economic performance.

Smith teaches providing the 3-tier commission percentage for a given customer account, such that the customer may be charged according to the server usage or performance instead of a fixed fee "by the box." Smith, paragraph 0015. Smith does not teach or suggest allocating resources in accordance with service level agreement based on economic factors as recited in claim 1. Therefore, Smith does not teach or suggest determining whether processing of the request generates a revenue or a penalty, wherein a revenue is generated when an allocation of resources is such that the request is processed in accordance with the service level agreement and a penalty that is generated when the allocation of resources is such that the request is not processed in accordance with the service level agreement as recited in claim 1.

Furthermore, because Smith does not teach or suggest determining whether processing of the request generates a revenue or a penalty, wherein a revenue is generated when an allocation of resources is such that the request is processed in accordance with the service level agreement and a penalty that is generated when the allocation of resources is such that the request is not processed in accordance with the service level agreement as recited in claim 1, Smith cannot teach or suggest that the total profit is obtained by subtracting the penalty from the revenue for each request as further recited in claim 1. Smith teaches away from obtaining a total profit by subtracting the penalty from the revenue for each request in that Smith teaches that the tiered commission percentage is paid to the service provider regardless of whether a profit or penalty is generated for each service request. Smith teaches that the customer is charged for services based on the 3-tier commission percentage instead of maximizing a total profit for processing requests in a computing system by allocating computing system resources based on whether a revenue or

penalty is generated by each request as recited in claim 1. Therefore, Smith fails to teach or suggest all features recited in claim 1 of the present invention.

Moreover, Appellants agree with the Examiner that "Smith fails to disclose a method wherein calculating a total profit includes, for each request received by the computing system for the data network site, determining whether processing of the request generates a revenue or a penalty, wherein a revenue is generated when an allocation of resources is such that the request is processed in accordance with the service level agreement and a penalty is generated when the allocation of resources is such that the request is not processed in accordance with the service level agreement, and wherein the total profit is obtained by subtracting the penalty from the revenue for each request. Final Office Action, page 6.

Pappalardo fails to cure the deficiencies of Smith. Pappalardo teaches that "Cable and Wireless Communications, Inc. is beefing up its maximum allowable latency service level agreement for dedicated Internet access customers." Pappalardo, Abstract. In addition, Pappalardo teaches that "[n]early all internet service providers offer one-day service credits if a service level agreement is not met. For example, an AT&T managed internet service customer will get a $66 credit if more than .07% of their packets are lost in one month. That credit is based on al $1,970 monthly service fee a managed internet service customer pays on a one-year contract for a dedicated T-1. Genuity offers customers a slightly stronger credit. The internet service provider offers a three-day credit if its network is unavailable for more that 60 minutes during one instance." Pappalardo, lines 28-32. In other words, Pappalardo teaches that internet service providers receive a penalty for failing to meet service level agreements.

However, Pappalardo does not teach or suggest allocating resources of the computing system to maximize the total profit, wherein calculating a total profit includes, for each request received by the computing system for the data network site, determining whether processing of the request generates a revenue or a penalty, wherein a revenue is generated when an allocation of resources is such that the request is processed in accordance with the service level agreement and a penalty is generated when the allocation of resources is such that the request is not processed in accordance with the service level agreement as recited in claim 1. Pappalardo makes no reference to **allocating resources** of the computing system **to maximize the total profit** as recited in claim 1. Therefore, Pappalardo does not teach or suggest this recited claim 1

feature. In addition, Pappalardo makes no reference to determining a revenue or penalty for each request as further recited in claim 1.

Pappalardo teaches that a customer will receive a one-day service credit of $66 if more than .07% of their packets are lost in one month. Pappalardo, lines 28-29. In other words, .07% of the packets sent over the network are required to be lost over a period of one month before a customer receives a credit from the internet service provide as taught by Pappalardo. Consequently, Pappalardo teaches that if .069% of the packets are lost in a month, no credit is given to the customer, thus, no penalty is accessed to the internet service provider for loosing packets for individual service requests. When a credit is given to the customer by the service provider for failing to meet the service level agreement in Pappalardo, the credit is a full one-day credit of $66 and is not based upon each request. Further, the period of time for calculating whether the customer receives a credit is at the end of each month and is not calculated for each request. Also, the number of packets required to be lost during a month is fixed at .07% and is not based upon each request.

Pappalardo also teaches that a customer will receive a three-day credit if the network is unavailable for more that 60 minutes during one instance. Pappalardo, lines 31-32. "During one instance" means that the network outage has to be one individual time period of more than 60 minutes as opposed to a cumulative total of more than 60 minutes for network unavailability during a one month period. In other words, Pappalardo teaches that if the network is unavailable for three instances of 59 minutes each during a one month period, no credit is given to the customer and no penalty is accessed to the internet service provider for failure to provide network availability for individual service requests during the network outage time periods. Moreover, Pappalardo teaches that the customer credit is based upon system performance factors, whereas claim 1 recites allocating resources of the computing system to maximize the total profit, which is based on economic factors. Therefore, Pappalardo does not teach or suggest that computing system resources are allocated based on whether a revenue or penalty is generated for each request as recited in claim 1.

Since Pappalardo does not teach or suggest allocating resources of the computing system to maximize the total profit, wherein calculating a total profit includes, for each request received by the computing system for the data network site, determining whether processing of the request

generates a revenue or a penalty, wherein a revenue is generated when an allocation of resources is such that the request is processed in accordance with the service level agreement and a penalty is generated when the allocation of resources is such that the request is not processed in accordance with the service level agreement as recited in claim 1, then Pappalardo cannot teach or suggest that the total profit is obtained by subtracting the penalty from the revenue for each request as further recited in claim 1. As a result, Pappalardo does not teach or suggest all features recited in claim 1 of the present invention.

Therefore, because neither Smith nor Pappalardo teach or suggest allocating resources of the computing system to maximize the total profit, wherein calculating a total profit includes, for each request received by the computing system for the data network site, determining whether processing of the request generates a revenue or a penalty, wherein a revenue is generated when an allocation of resources is such that the request is processed in accordance with the service level agreement and a penalty is generated when the allocation of resources is such that the request is not processed in accordance with the service level agreement, and wherein the total profit is obtained by subtracting the penalty from the revenue for each request as recited in claim 1, the combination of Smith and Pappalardo cannot teach or suggest these recited features.

In view of the arguments above, independent claims 1, 15, and 29 are in condition for allowance. Claims 3-14, 17-28, and 31-42 are dependent claims depending on independent claims 1, 15, and 29, respectively. Consequently, claims 3-14, 17-28, and 31-42 also are allowable, at least by virtue of their dependence on allowable claims. Furthermore, these dependent claims also contain additional features not taught by Smith and Pappalardo.

For example, dependent claim 3 of the present invention, which is representative of dependent claims 17 and 31, reads as follows:

> 3. The method of claim 1, wherein calculating a total profit includes using a cost model in which profit is gained for each request to the data network site that is processed in accordance with a service level agreement and a penalty is paid for each request to the data network site that is not processed in accordance with the service level agreement.

The Examiner uses the same rationale for the rejection dependent claims 3, 17, and 31 as the rejection of independent claims 1, 15, and 29. Consequently, the arguments regarding independent claims 1, 15, and 29 above are relevant and are herein applied to dependent claims

3, 17, and 31. As shown above, Smith and Pappalardo do not teach or suggest allocating resources of the computing system to maximize the total profit, wherein calculating a total profit includes, for each request received by the computing system for the data network site, determining whether processing of the request generates a revenue or a penalty, wherein a revenue is generated when an allocation of resources is such that the request is processed in accordance with the service level agreement and a penalty is generated when the allocation of resources is such that the request is not processed in accordance with the service level agreement, and wherein the total profit is obtained by subtracting the penalty from the revenue for each request as recited in claims 1, 15, and 29. As a result, Smith and Pappalardo cannot teach or suggest calculating a total profit includes using a cost model in which profit is gained for each request to the data network site that is processed in accordance with a service level agreement and a penalty is paid for each request to the data network site that is not processed in accordance with the service level agreement as recited in claims 3, 17, and 31. Therefore, Smith and Pappalardo do not teach or suggest this feature recited in claims 3, 17, and 31.

As a further example, dependent claim 8 of the present invention, which is representative of dependent claims 22 and 36, reads as follows:

> 8. The method of claim 7, wherein determining an optimum resource allocation includes:
>
> modeling the resource allocation as a queuing network;
>
> decomposing the queuing network into separate queuing systems; and
>
> summing cost calculations for each of the separate queuing systems,
>
> wherein summing cost calculations includes summing profits and penalties of each of the separate queuing systems.

With regard to claim 8, the Examiner states:

> As per **Claims 8, 22 and 36,** Smith discloses a method wherein determining an optimum resource allocation includes:
>
> - modeling the resource allocation as a queuing network;
> - decomposing the queuing network into separate queuing systems; and
> - summing cost calculations for each of the separate queuing systems (Para. 13, 13, 40, and 53).
>
> Nonetheless, Smith fails to disclose wherein summing cost calculations includes summing profits and penalties of each of the separate queuing systems. However, Pappalardo teaches summing profits and penalties of each of the systems (Lines 28-32). Therefore, it would have been obvious to one of ordinary skill in the art at

> the time of applicant's invention to modify the method of Smith and include determining the costs by calculating the profits and penalties of each of the
>
> systems as taught by Pappalardo because penalizing the service provider can greatly improve service and therefore reduce costs.

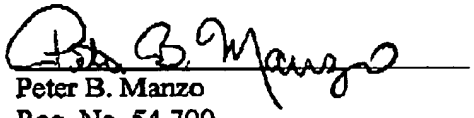
Final Office Action dated October 27, 2005, page 8.

Appellants agree with the Examiner that "Smith fails to disclose wherein summing cost calculations includes summing profits and penalties of each of the separate queuing systems. Pappalardo does not teach or suggest this feature recited in claims 8, 22, and 36 either. As shown above, Pappalardo does not teach or suggest determining whether processing of the request generates a revenue or a penalty as recited in claims 1, 15, and 29. Because Pappalardo does not teach or suggest determining whether processing of each request generates a revenue or a penalty as recited in claims 1, 15, and 29, Pappalardo cannot teach or suggest summing cost calculations includes summing profits and penalties of each of the separate queuing systems as recited in claims 8, 22, and 36. Therefore, Smith and Pappalardo do not teach or suggest this feature recited in claims 8, 22, and 36.

Accordingly, the rejection of claims 1, 3-15, 17-29, and 31-42 as being unpatentable over Smith in view of Pappalardo has been overcome.

CONCLUSION

In view of the comments above, Appellants respectfully urge that the rejection of claims 1, 3-15, 17-29, and 31-42 not be sustained.



Peter B. Manzo
Reg. No. 54,700
YEE & ASSOCIATES, P.C.
PO Box 802333
Dallas, TX 75380
(972) 385-8777

CLAIMS APPENDIX

The text of the claims involved in the appeal are:

1. A method in a data processing system of allocating resources of a computing system to hosting of a data network site to thereby maximize generated profit, comprising:

calculating a total profit for processing requests received by the computing system for the data network site based on at least one service level agreement; and

allocating resources of the computing system to maximize the total profit, wherein calculating a total profit includes, for each request received by the computing system for the data network site, determining whether processing of the request generates a revenue or a penalty, wherein a revenue is generated when an allocation of resources is such that the request is processed in accordance with the service level agreement and a penalty is generated when the allocation of resources is such that the request is not processed in accordance with the service level agreement, and wherein the total profit is obtained by subtracting the penalty from the revenue for each request.

3. The method of claim 1, wherein calculating a total profit includes using a cost model in which profit is gained for each request to the data network site that is processed in accordance with a service level agreement and a penalty is paid for each request to the data network site that is not processed in accordance with the service level agreement.

4. The method of claim 1, wherein the requests are classified into one or more classes of requests and each class of request has a corresponding service level agreement from the at least one service level agreement.

5. The method of claim 1, wherein allocating resources includes determining an optimal traffic assignment for routing requests to thereby maximize the total profit.

6. The method of claim 1, wherein the computing system is a web server farm and wherein the resources are servers of the web server farm, wherein each server of the web server farm accommodates a different set of classes of requests.

7. The method of claim 6, further comprising determining an optimum resource allocation to maximize the total profit.

8. The method of claim 7, wherein determining an optimum resource allocation includes:

modeling the resource allocation as a queuing network;

decomposing the queuing network into separate queuing systems; and

summing cost calculations for each of the separate queuing systems, wherein summing cost calculations includes summing profits and penalties of each of the separate queuing systems.

9. The method of claim 8, further comprising optimizing the summed cost calculations to maximize generated profit and thereby determine an optimum resource allocation.

10. The method of claim 1, wherein allocating resources includes determining an optimum traffic assignment and an optimum generalized processor sharing coefficient for a class of requests.

11. The method of claim 1, wherein allocating resources includes optimizing a cost function associated with a class of requests.

12. The method of claim 11, wherein optimizing the cost function includes modeling the optimization as a network flow from a source, through sinks representing sites/classes of request and servers/classes of requests, to a supersink.

13. The method of claim 8, wherein decomposing the queuing network into separate queuing systems includes decomposing the queuing network into decomposed models for each class in a hierarchical manner.

14. The method of claim 13, wherein a decomposed model for class k is based on a decomposed model of classes 1 through k-1.

15. An apparatus for allocating resources of a computing system to hosting of a data network site to thereby maximize generated profit, comprising:

means for calculating a total profit for processing requests received by the computing system for the data network site based on at least one service level agreement; and

means for allocating resources of the computing system to maximize the total profit, wherein the means for calculating a total profit includes means for determining whether processing of each request generates a revenue or a penalty for each request received by the computing system for the data network site, wherein a revenue is generated when an allocation of resources is such that the request is processed in accordance with the service level agreement and a penalty is generated when the allocation of resources is such that the request is not processed in accordance with the service level agreement, and wherein the total profit is obtained by subtracting the penalty from the revenue for each request.

17. The apparatus of claim 15, wherein the means for calculating a total profit includes means for using a cost model in which profit is gained for each request to the data network site that is processed in accordance with a service level agreement and a penalty is paid for each request to the data network site that is not processed in accordance with the service level agreement.

18. The apparatus of claim 15, wherein the requests are classified into one or more classes of requests and each class of request has a corresponding service level agreement from the at least one service level agreement.

19. The apparatus of claim 15, wherein the means for allocating resources includes means for determining an optimal traffic assignment for routing requests to thereby maximize the total profit.

20. The apparatus of claim 15, wherein the computing system is a web server farm and wherein the resources are servers of the web server farm, wherein each server of the web server farm accommodates a different set of classes of requests.

21. The apparatus of claim 20, further comprising means for determining an optimum resource allocation to maximize the total profit.

22. The apparatus of claim 21, wherein the means for determining an optimum resource allocation includes:

means for modeling the resource allocation as a queuing network;

means for decomposing the queuing network into separate queuing systems; and

means for summing cost calculations for each of the separate queuing systems, wherein

means for summing cost calculations includes means for summing profits and penalties of each of the separate queuing systems.

23. The apparatus of claim 22, further comprising means for optimizing the summed cost calculations to maximize generated profit and thereby determine an optimum resource allocation.

24. The apparatus of claim 15, wherein the means for allocating resources includes means for determining an optimum traffic assignment and an optimum generalized processor sharing coefficient for a class of requests.

25. The apparatus of claim 15, wherein the means for allocating resources includes means for optimizing a cost function associated with a class of requests.

26. The apparatus of claim 25, wherein the means for optimizing the cost function includes means for modeling the optimization as a network flow from a source, through sinks representing sites/classes of request and servers/classes of requests, to a supersink.

27. The apparatus of claim 22, wherein the means for decomposing the queuing network into separate queuing systems includes means for decomposing the queuing network into decomposed models for each class in a hierarchical manner.

28. The apparatus of claim 27, wherein a decomposed model for class k is based on a decomposed model of classes 1 through k-1.

29. A computer program product comprising computer executable instructions embodied in a computer readable medium for allocating resources of a computing system to hosting of a data network site to thereby maximize generated profit, comprising:

first instructions for calculating a total profit for processing requests received by the computing system for the data network site based on at least one service level agreement; and

second instructions for allocating resources of the computing system to maximize the total profit, wherein the first instructions include, for each request received by the computing system for the data network site, first sub-instructions for determining whether processing of the request generates a revenue or a penalty, wherein a revenue is generated when an allocation of resources is such that the request is processed in accordance with the service level agreement and a penalty is generated when the allocation of resources is such that the request is not processed in accordance with the service level agreement, and second sub-instructions for obtaining the total profit by subtracting the penalty from the revenue for each request.

31. The computer program product of claim 29, wherein the first instructions include instructions for using a cost model in which profit is gained for each request to the data network site that is processed in accordance with a service level agreement and a penalty is paid for each request to the data network site that is not processed in accordance with the service level agreement.

32. The computer program product of claim 29, wherein the requests are classified into one or more classes of requests and each class of request has a corresponding service level agreement from the at least one service level agreement.

33. The computer program product of claim 29, wherein the second instructions include instructions for determining an optimal traffic assignment for routing requests to thereby maximize the total profit.

34. The computer program product of claim 29, wherein the computing system is a web server farm and wherein the resources are servers of the web server farm, wherein each server of the web server farm accommodates a different set of classes of requests.

35. The computer program product of claim 34, further comprising third instructions for determining an optimum resource allocation to maximize the total profit.

36. The computer program product of claim 35, wherein the third instructions include:

instructions for modeling the resource allocation as a queuing network;

instructions for decomposing the queuing network into separate queuing systems; and

instructions for summing cost calculations for each of the separate queuing systems, wherein instructions for summing cost calculations includes instructions for summing profits and penalties of each of the separate queuing systems.

37. The computer program product of claim 36, further comprising instructions for optimizing the summed cost calculations to maximize generated profit and thereby determine an optimum resource allocation.

38. The computer program product of claim 29, wherein the second instructions include instructions for determining an optimum traffic assignment and an optimum generalized processor sharing coefficient for a class of requests.

39. The computer program product of claim 29, wherein the second instructions include instructions for optimizing a cost function associated with a class of requests.

40. The computer program product of claim 39, wherein the instructions for optimizing the cost function includes instructions for modeling the optimization as a network flow from a source, through sinks representing sites/classes of request and servers/classes of requests, to a supersink.

41. The computer program product of claim 36, wherein the instructions for decomposing the queuing network into separate queuing systems includes instructions for decomposing the queuing network into decomposed models for each class in a hierarchical manner.

42. The computer program product of claim 41, wherein a decomposed model for class k is based on a decomposed model of classes 1 through k-1.

EVIDENCE APPENDIX

There is no evidence to be presented.

RELATED PROCEEDINGS APPENDIX

There are no related proceedings.